



Ascent Lite+

User manual

Digital FPV video transmitter (VTX) with camera



Never power on the transmitter without an installed antenna. In the Czech Republic, the maximum permitted transmit power in the 5.8 GHz band is 25 mW EIRP.

Version 1.0 · Rotorama, s.r.o.

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1. Safety instructions

1.1 Before first use

The Walksnail Ascent Lite+ is a **digital video transmitter (VTX) with a camera**, designed to be installed in an FPV drone or model aircraft. Read this entire manual before installation and keep it for future reference.

- **Complete all antenna installation before powering on the device.** Powering on the transmitter without an antenna will damage its internal components.
- The supply voltage must not exceed **12.6 V**. A higher voltage will destroy the transmitter.
- Solder only with the aircraft battery disconnected and observe the correct polarity of the power wires.
- Handle the transmitter and camera by the housing; do not touch the solder pads or connectors. Discharge static electricity by touching a grounded metal object before handling.
- Do not bend the camera coaxial cable or the antenna cable sharply, and keep them away from the propellers.

1.2 Operating rules

- Transmit power is limited to 10 mW when **standby mode** is enabled. Arm the flight controller (FC) or turn off standby mode before the aircraft takes off.
- If this unit operates simultaneously with other 5.8 GHz devices, select a different channel for each device.
- When enabling the camera gyro stabilization function, apply shock absorption to the camera mounting platform to avoid stabilization failure.
- The transmitter heats up during operation. Ensure airflow and do not leave it switched on for long periods in an enclosed space without air circulation.
- Set the transmit power only within the limits permitted in the country of operation – see chapter 7.2.

1.3 Manufacturer's disclaimer

Install and operate the product strictly in accordance with this manual. The manufacturer, Caddx Technology (Shenzhen) Co., Ltd., shall not be liable for any losses caused by improper user operation, including but not limited to powering on without installed antennas, power supply exceeding the rated voltage, or operation within no-fly zones.

CADDXFPV is a trademark of Caddx Technology (Shenzhen) Co., Ltd. All product names and brands appearing in this manual are trademarks or registered trademarks of their respective owners.

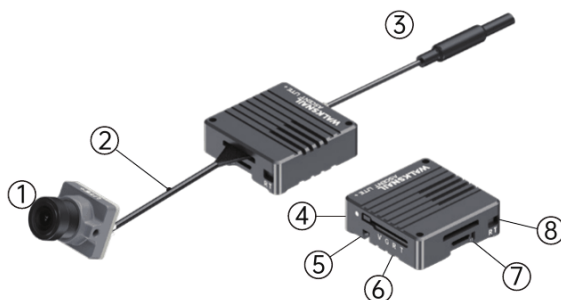
2. Product description

The **Walksnail Ascent Lite+** is a lightweight digital FPV VTX integrating high-definition video and real-time audio transmission. The VTX alone weighs only 2.75 g. It supports up to 1080p at 120 fps with an average latency of 35 ms; the camera has a 147° ultra-wide-angle lens and a built-in microphone for synchronized audio recording.

The transmitter features automatic frequency hopping and AES-256 encryption against cross-interference, a port for head tracking expansion, and display of flight controller data (OSD) with support for Betaflight, INAV and other systems. Its thermally conductive metal body ensures stable durability. It fits micro drones, racing drones and fixed-wing aircraft of all types.

❖ Audio recording is not supported in the 1080p 100 fps and 120 fps modes.

2.1 Components



Ascent Lite+ components

① Camera	④ Link button	⑦ USB port
② Coaxial cable	⑤ LED indicator	⑧ Gimbal port
③ Antenna	⑥ Power pads	

2.2 Package contents

① 1× Ascent Lite+	⑤ 4× TM2×4 screw
② 1× instruction manual	⑥ 4× TM2×6 screw
③ 1× 6Pin5 upgrade cable	⑦ 1× 45 mm screwdriver
④ 4× screw washer	⑧ 1× nano gel double-sided tape

FPV goggles, flight controller and battery are not included.

2.3 Specifications

Name	Ascent Lite+ VTX
Model	WN13-7007B
FCC ID	2BHG9-WN13-7007B
Communication frequency	5.730–5.815 GHz
Transmitter power (EIRP)	CE: < 14 dBm (< 25 mW)
Channels	3
Wide voltage input	3–12.6 V
I/O interface	JST1.0, 4-pin (power cord) HSG0.8, 5-pin (USB)
Supported FC systems	Betaflight, INAV, FETtec, KISS, ArduPilot
Bitrate	max. 25 Mbps
OSD	Canvas mode
MIC recording	supported
End-to-end latency	35 ms average
Antenna	1× (IPEX-1)
Operating bandwidth	5 / 10 / 20 MHz / Auto
Image sensor	1/2.8"
Resolution	1080p: 120 / 100 / 60 fps 720p: 120 / 100 / 60 fps
Aspect ratio	16 : 9
Microphone	built into the camera
Mounting holes	20 × 20 mm (M2)
Weight	10.5 g
Dimensions	camera: 12 × 14 × 15.8 mm VTX: 23.5 × 23.5 × 8 mm

3. Connection and binding

3.1 Wires and connectors



Power cord (1-4) and upgrade cable with USB connector (5-8)

	Colour	Function
1	red	power in + (3-12.6 V)
2	black	power GND
3	white	UART RX - connects to flight controller TX
4	grey	UART TX - connects to flight controller RX
5	blue	USB DP
6	yellow	USB DN
7	black	USB GND
8	red	USB 5 V

3.2 Connecting to the flight controller

Follow the steps below in sequence to guarantee proper device operation:

- ① Connect the 4-pin cable of the VTX to the designated UART port on the flight controller (FC) via soldering or plug-in connection.
- ② Connect the red wire to the 5 V output pin of the flight controller.
- ③ Connect the black wire to the GND pin of the flight controller.
- ④ Cross-connect TX and RX: VTX TX → flight controller RX, VTX RX → flight controller TX.

✱ **The power input of the transmitter accepts 3-12.6 V. A voltage higher than 12.6 V will destroy the transmitter.**

3.3 Binding

Binding is required for new units on first use. After successful binding, the devices connect automatically on subsequent power-on.

- ① Power on both the VTX and the FPV goggles.
- ② Wait for device startup to complete; the VTX indicator flashes green and a device status icon appears on the goggles screen.

- ③ Press the bind buttons on both the VTX and the goggles simultaneously (see figure). The devices enter pairing mode: the VTX indicator turns red and the goggles buzzer emits intermittent beeps.
- ④ Upon successful pairing, the VTX indicator turns solid green, the goggles buzzer stops beeping and the real-time video feed is displayed in the goggles.



Bind button on the VTX (left) and on the goggles (right)

4.2 Older Betaflight versions (CLI)

If the flight controller firmware only allows HD OSD to be configured by commands, proceed as follows:

- ① In the *Ports* tab, enable the *MSP* function for the UART port used and set the peripheral to *VTX (MSP + DisplayPort)*.
- ② Open the *CLI* tab, enter the following commands and confirm each with the Enter key:

set osd_displayport_device = MSP

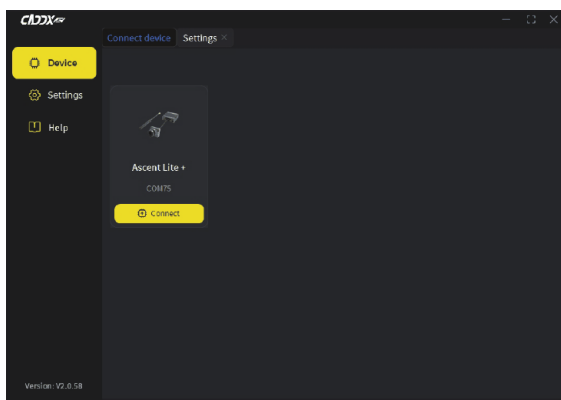
set vcd_video_system = HD

save

5. Firmware upgrade

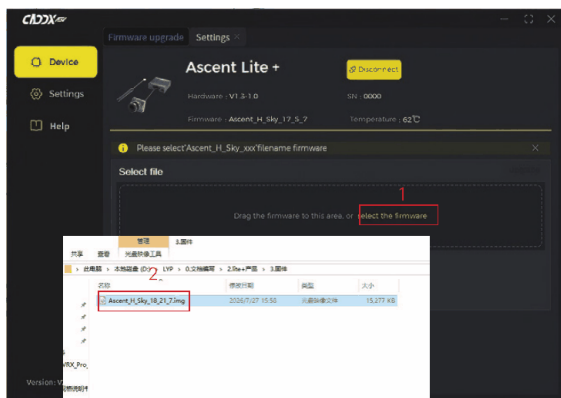
Do not cut power or unplug the USB cable during the entire upgrade process. An interrupted upgrade will permanently damage the device.

- ① Download the latest matching firmware version from the official website www.caddxfpv.com.cn.
- ② Connect the VTX to a computer via USB data cable and maintain power to the VTX.
- ③ Launch the upgrade software *Caddx_PC_Tool*. The software automatically recognizes the connected VTX.

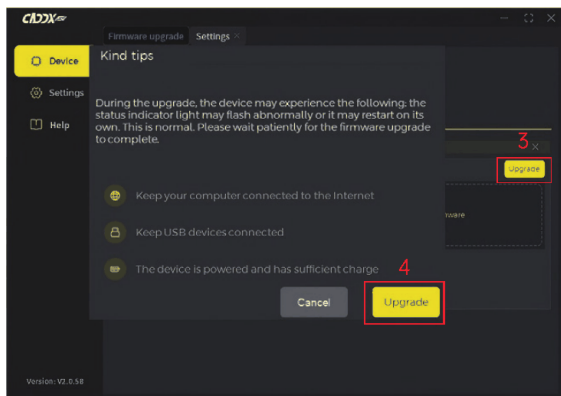


Recognized VTX in Caddx_PC_Tool

- ④ In the software, click *select the firmware* ①, select the downloaded firmware file ②, click *Upgrade* ③ and confirm flashing in the *Kind tips* window with the *Upgrade* button ④.



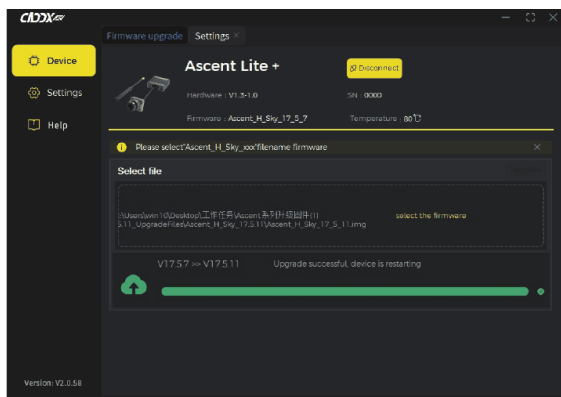
Selecting the firmware file



Starting the firmware flashing

The *Kind tips* window points out that during the upgrade the status indicator may flash abnormally or the device may restart on its own – this is normal; wait patiently for the upgrade to complete. Keep the computer connected to the internet, keep the USB cable connected and make sure the device is sufficiently powered.

- ⑤ Wait for the progress bar to complete fully. Disconnect the USB cable and power supply only after the software displays an upgrade success notification.



Upgrade completed successfully

6. Status indication and troubleshooting

6.1 VTX status LED

State	VTX indicator
binding (link state)	steady red
firmware upgrade	red, rapidly flashing
wireless connection, image output normal	steady green
wireless not connected	green, rapidly flashing
wireless connection normal, image abnormal	green, slowly flashing

6.2 Troubleshooting

Problem	What to check
LED does not light up	power supply of the VTX, polarity and joints of the red and black wires
LED flashes green rapidly, no image in the goggles	whether the goggles are on and bound to the VTX (chapter 3.3); the antenna
LED flashes green slowly	connection of the camera coaxial cable to the VTX
No OSD in the image	TX and RX cross-connection, MSP function enabled and peripheral VTX (<i>MSP + DisplayPort</i>) on the correct UART port (chapter 4)
Software does not recognize the VTX	USB cable, VTX power supply
Short range, video dropouts	antenna and its connector, channels of other 5.8 GHz devices, standby mode

6.3 Manufacturer support

For the latest firmware downloads, tutorial videos and troubleshooting guides, visit the manufacturer's website www.caddxfpv.com.cn. For warranty claims and questions, contact your dealer – the importer's contact details are given in chapter 8.1.

7. Legal conditions of operation in the Czech Republic and the EU

7.1 The law of the country of operation applies

Regulations (EU) 2019/947 and 2019/945 apply in all EU member states, but national implementing rules differ from country to country - registration portals, minimum pilot age, geographical zones, compulsory insurance, permitted frequency bands and maximum transmit power. The information in this chapter describes the situation in the Czech Republic. If you operate the transmitter in another country, you must comply with the regulations of the country in which you fly.

7.2 Frequency band and transmit power

Frequency band	5.730-5.815 GHz
Max. transmit power for the EU	< 14 dBm EIRP (< 25 mW)
Limit in the Czech Republic	25 mW EIRP in the 5725-5875 MHz band (ČTÚ general authorisation VO-R/10)

- The manufacturer states a transmit power of 500 mW and a range of up to 8 km under ideal conditions. A power of 500 mW (27 dBm) corresponds to the FCC/SRRC mode, which is **not permitted in the Czech Republic or the EU**. At the permitted power, the range is shorter.
- The user is responsible for setting the transmit power and frequency.
- Operate the transmitter only with the antenna specified by the manufacturer. Additional RF amplifiers are not permitted.
- Outside the Czech Republic, the frequency bands and power limits of the respective country apply.

7.3 The VTX is a component, not a complete drone

The transmitter is not an unmanned aircraft and does not bear a class identification label under Regulation (EU) 2019/945. Once installed in an aircraft, the **operation** of the aircraft is subject to Regulation (EU) 2019/947 and the related national regulations. The operator is responsible for compliance.

- The transmitter contains a camera, so the aircraft operator must **register** regardless of the aircraft's weight. In the Czech Republic, registration is managed by the Civil Aviation Authority at dron.caa.gov.cz; the assigned number must be displayed on the aircraft.
- The usual open-category limits apply: height **up to 120 m** above ground, constant visual line of sight and no flying over assemblies of people.
- When flying with FPV goggles, an **unmanned aircraft observer** must stand next to you and keep the aircraft in visual line of sight without optical aids.
- Before flying, check the geographical zones on the map at dronemap.rlp.cz.
- The camera records video and the built-in microphone records sound. Respect the privacy of others – do not record people or their private property without their consent.

8. Information for the EU and Czech Market

8.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorاما.cz
Phone	+420 252 252 098
Website	www.rotorاما.cz

8.2 Product conformity



- The product bears the **CE** marking and complies with the requirements of the applicable European Union harmonisation legislation.
- A copy of the **EU Declaration of Conformity** is available from the importer at the address stated above or at the e-mail address info@rotorاما.cz.
- **Product identification:** type designation **WN13-7007B**; the product name is marked on the transmitter housing.

8.3 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also <https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu>.

9. Warranty and rights arising from defective performance

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection. The manufacturer does not issue its own warranty terms for this product.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 8.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.